### Methods Blurb

A simple Bayesian estimation model was built to model the uncertainty surrounding the percentage reduction, given the data at hand. Briefly, the pre-sanitization and post-sanitization colony counts were modelled using a Poisson likelihood, with a DiscreteUniform(0, 1000) prior placed on the Poisson rate parameter. The notation is as follows:

We then deterministically compute the percentage reduction from the estimated posterior distributions.

The Bayesian estimation model was implemented in PyMC3 (ver. 3.0) in the Python programming language (ver 3.5). Notebooks are available on GitHub (https://github.com/ericmjl/mia-stats/blob/master/sterilization/sterilization.ipynb) and is archived on Zenodo (DOI: http://doi.org/10.5281/zenodo.275624).